

RUMANIA

PLOESTI NO. 69.1

ISSUED OCTOBER 15, 1942

AIR OBJECTIVE FOLDER

NO. 69.1

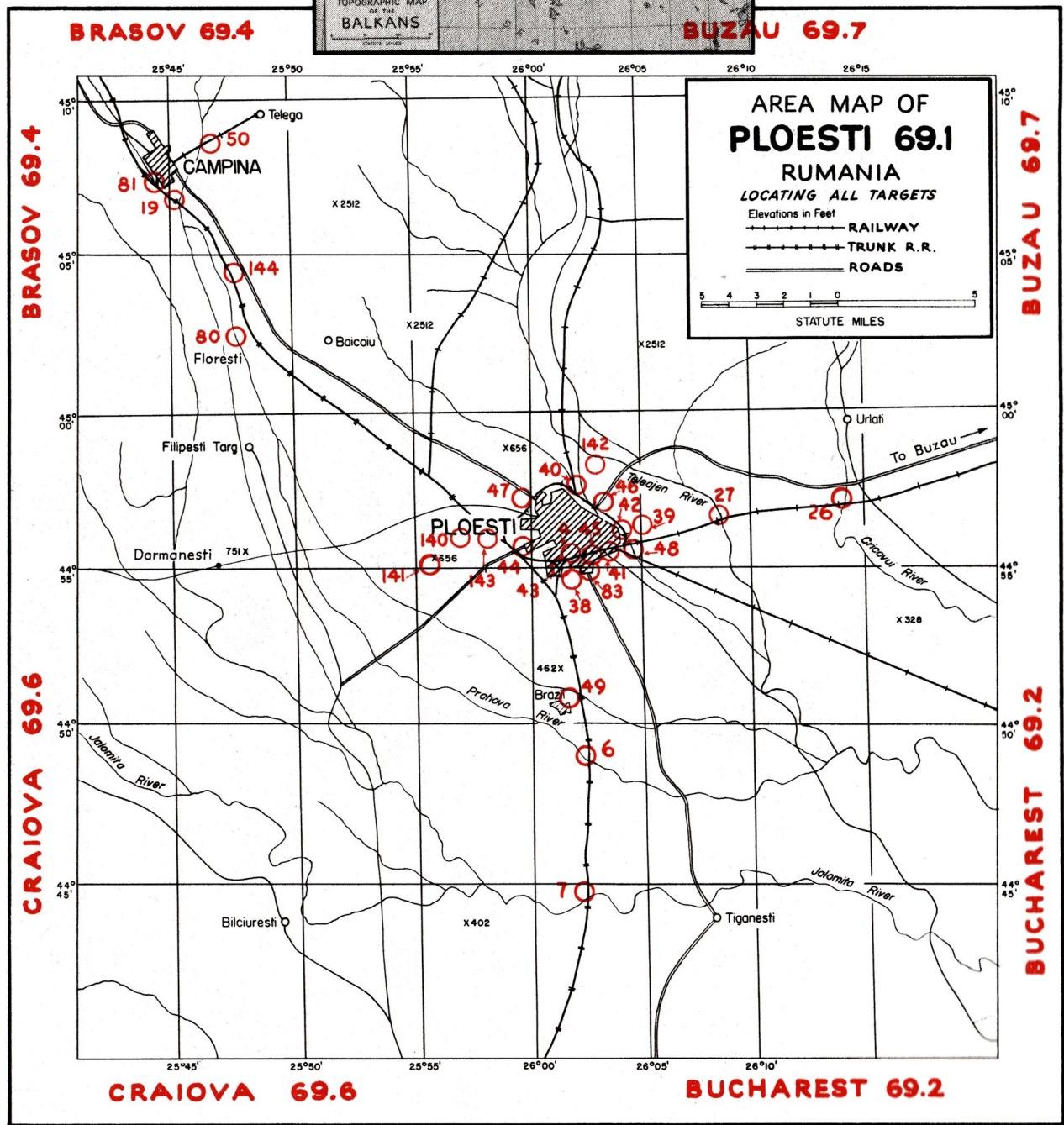
PLOESTI AREA
RUMANIA

INTELLIGENCE SERVICE AAF

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ON OFFENSIVE MISSIONS

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SUMMARY AND EVALUATION OF AREA

DESCRIPTION: The city of Ploesti and its suburbs constitute an area of approximately 19 square miles with an estimated population of 100,000. The city is situated in the Wallachian Plain 30 miles north of Bucharest; to the north of the city rise the foothills of the Transylvanian Alps and 5 miles to the east of the town the Teleajen River flows in a southeasterly direction. The northern region of the area contains numerous oil fields, particularly in the sector around Campina. Ploesti is almost the geographical center of the area as a whole and is the hub of rail and highway routes converging from all directions. Approaching the area from the south, attacking bombers would fly near the large city of Bucharest and its environs.

IMPORTANCE: The Ploesti Objective Area (69.1) is by far the most important area in Rumania, as it is the center of the Rumanian oil refining industry, which supplies Germany with approximately 35% of her petroleum products.

There are twelve large oil refineries in this objective area which produce approximately 86% of the refined petroleum products of Rumania and represent 96% of the total cracking capacity. These refineries have a capacity of 189,000 barrels per day and are now producing an average of 170,000 barrels daily. Ten of these refineries are located in the city of Ploesti. One of the remaining two is situated to the south of Ploesti, in the small town of Brazii and the other one 20 miles to the northwest in Campina.

The remaining 14% of refined petroleum products is produced in some 39 refineries throughout Rumania. Most of these plants are small and obsolete, and their production would have to be used for local consumption in the event that the major refineries were destroyed.

The Rumanian petroleum production (crude or refined) is of assistance to the Axis only if the oil can be effectively transported from the Ploesti area. Although the pipelines move a considerable amount of oil from Ploesti to Giurgiu, yet 80% of the oil leaving this area moves by rail. Continuous and effective operations against refineries and transportation objectives in Rumania would result in a serious blow to the German war effort.

DEFENSES AND VULNERABILITY: The defenses of the Ploesti area are quite strong and active. Local defenses exist for the various groups of refineries and possibly for certain of the vital transportation points. The Germans have carefully protected the vital parts of the refineries by the construction of protective walls around them. The storage tanks have been camouflaged with paint or by wooden sheds built over them.

A nightly barrage of forty to one hundred balloons is maintained over the city. It has been reported they are lowered at day and that at night they are raised from 6 to 10,000 feet. Included in the various protective defenses has been the construction of "dummy towns" to deceive attacking bombers. A dummy Ploesti was erected on the site of an encampment at Albesti about 7 miles east of Ploesti in June, 1941 and during the Russian attack this "dummy town" was purposely set on fire. It is also reported that a "dummy town" has been constructed about 8 miles northwest of Ploesti. The blackout of the town is said to be very good and the only light likely to be seen is a glow from some of the refinery plants that have not been stopped.

The fighter aircraft defenses of Ploesti were taken over by the German Air Force during the Balkan invasion in the spring of 1941 and since that time they have been shared equally with the Rumanians. There are three principal airdromes in the area supplemented by two alternate bases. Attacking bombers may also receive opposition from the enemy airbases in the Bucharest area to the south of Ploesti.

The outer anti-aircraft defenses of Ploesti form the perimeter of an oval extending to the north, with the north-south axis about 30 miles in length and the east-west axis about 20 miles long. The inner defenses of the city are very strong and in October, 1941, extended for five miles in a belt around the town, with the guns increasing in calibre towards the edge of the belt. In most cases the guns have been camouflaged by nets or "roofs" over them.

The front cover and pages 1 through 11 have been lifted out of an actual Ploesti Air Objective Folder used by the USAAF 460th Bombardment Group in 1944. SSI and John Gray would like to express their gratitude to our technical advisor, Leroy Newby, who flew some of the real raids over Ploesti and who made the folder available for reproduction.

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TABULATION OF TARGET INFORMATION

TARGET NO.	TARGET NAME	APPROXIMATE COORDINATES	DESCRIPTION AND SIGNIFICANCE	TARGET CHART NO.
OIL				
83	Astra Romana Refinery (Ploesti)	44° 55' N..... 26° 02' E	Cap 2,000,000 tons Yr or 18% of Rumanian total; cracking Cap 650,000 tons yr or 32% of Rumanian total. Largest refinery in Europe. Possesses imp modern cracking units. Most southern located refinery in Ploesti; identified by 4 large tanks as approached from south. Giurgiu pumping Sta is within target. (See photos A on page P-1; map on page M-3.)	83
39	Romano-American Refinery (Ploesti)	44° 57' N..... 26° 05' E	Cap 1,250,000 tons yr or 11% of Rumanian total; cracking Cap 400,000 tons yr or 17% of total. Third most imp Rumanian refinery with second largest cracking installations in Rumania. 3 mi E of Ploesti near Teleajen Station and 600 yds N of Buzau Ry. Prime targets in E part of plant. Includes 2 boiler pumps, power plant for Constantza pumping Sta, cracking, distillation plants. (See photos B & C on page P-2; map on page M-3.)	83
40	Concordia Vega Refinery (Ploesti)	44° 59' N..... 26° 02' E	Cap 1,500,000 tons yr or 13% of Rumanian total; cracking Cap 210,000 or 9% of total. Imp cracking equipment. Refinery installation, 3 boiler houses, distillation plant. Covers area approx 400 x 550 yds. N Ploesti, E of Rd and Ry to Valenii de Munte, slightly N of Ploesti N Sta. (See photo A on page P-1; photos D & E on page P-3; map on page M-3.)	83
41	Phoenix Unirea Refinery (Ploesti)	44° 56' N..... 26° 03' E	Cap 700,000 tons yr or 6% of Rumanian total; cracking Cap 85,000 tons yr or 4% of total. Cracking plant prime objective and adjoins objectives in Target 45. E of main freight Yds (Target 4), adjoining Standard Petrol Block (Target 45), S of Ry to Buzau, first refinery reached from SE. (See map on page M-3.)	83
42	Dacia (Dacia-Romano) Refinery (Ploesti)	44° 57' N..... 26° 04' E	Cap 375,000 tons yr or 3% of Rumanian total. Small, Non-cracking, older equipment. 1½ mi W of Romano-American (Target 39). Compact with refining units located between two tank farms on NW and SW limits of plant. (See map on page M-3.)	83
43	Phoenix-Orion Refinery (Ploesti)	44° 55' N..... 26° 02' E	Cap 460,000 tons yr or 4% of Rumanian total; cracking Cap 85,000 or 4% total. Small but contains modern cracking units. Equipment concentrated. Includes a lubricating oil plant, one of few in Rumania. In S Ploesti within group of several others. (See photo A on page P-1; map on page M-3.)	83
44	Colombia (Colombia-Aquila) Refinery (Ploesti)	44° 56' N..... 26° 01' E	Cap 300,000 tons yr or 3% of Rumanian total; cracking Cap 150,000 tons yr or 5% of total. Prod high proportion of benzine. Cracking equipment prime objective. Other units, including refinery installation, distillation plant, and boiler house are compact. SW Ploesti, N of Ry sidings NW of "Y" Ry Jc of Ry lines to Bucharest and Campina. (See photos F & G on page P-4; map on page M-3.)	83
45	Standard Petrol Block Refinery (Ploesti)	44° 56' N..... 26° 03' E	Cap 600,000 tons yr or 5% of Rumanian total; Cracking Cap 150,000 or 5% total. Modern cracking installations and lubricating oil plant. Vulnerable points include distillation plants, boiler house. Located in center of Ploesti refinery concentration. In SE Ploesti, adjacent to Phoenix-Unirea Refinery (Target 41), S of Buzau Ry. (See map on page M-3.)	83
46	Redeventza Refinery (Ploesti)	44° 57' N..... 26° 03' E	Cap 260,000 tons yr or 2% of Rumanian total. No cracking, old equipment. N Ploesti, N of Dambul R, S and adjoining Rd to Buzau, N of belt Ry around Ploesti. (See photo A on page P-1; map on page M-3.)	83

TABULATION OF TARGET INFORMATION

TARGET NO.	TARGET NAME	APPROXIMATE COORDINATES	DESCRIPTION AND SIGNIFICANCE	TARGET CHART NO.
OIL — continued				
47	Xenia (Xenia-Redeventza) Refinery (Ploesti)	44° 57' N..... 26° 00' E	Cap 300,000 tons yr or 3% of Rumanian total. No cracking, older, less imp than others. Prin objective within refinery is distillation unit, just W of RR where it crosses Rd to Campina. In NW Ploesti, in triangle formed by intersection of belt Ry and Rd to Campina. (See photo A on page P-1; map on page M-3.)	83
48	Constantsa Pumping Sta (Ploesti)	44° 56' N..... 26° 05' E	Pumping Sta for oil to Constantsa. Sta terminal for numerous pipelines from Ploesti refineries. Pumps are old but large, vulnerable only to direct hits. E of Ploesti, near Teleajen Sta, S of Buzau Ry. From air appears as mass of storage tanks and one brick bldg which is the target. (See text on page T-9; map on page M-3.)	83
49	Creditul Minier Refinery (Brazi)	44° 52' N..... 26° 01' E	Cap 600,000 tons yr or 5% of Rumanian total; cracking Cap 175,000 or 7% of total. Equipped with large cracking units. Modern refinery, including only high octane gasoline plant in Rumania. Other vital points are boiler, power house, distillation plant. 6 mi S of Ploesti, 30 Mi N of Bucharest, on W side of Bucharest-Ploesti Ry, 1 mi E of Brazi. Refinery area in shape of triangle bounded by Ry and Rd to Brazi. (See map on page M-4.)	49
50	Steaua Romana Refinery (Campina)	45° 08' N..... 25° 44' E	Cap 1,750,000 tons yr or 13% of Rumanian total; cracking Cap 400,000 tons yr or 17% of total. Third largest European refinery. Large cracking installations, modern distillation units, and only important paraffin plant in Rumania. NE portion of Campina 20 mi NW of Ploesti. (See photos H & I on page P-5; map on page M-5.)	50
TRANSPORTATION				
4	Ploesti Ry Yds	44° 56' N..... 26° 02' E	Prin Rumanian Ry center for marshalling of tank cars. Ry repair shops, roundhouse. Extend 1½ mi in ENE direction, S of city, width: 300 to 600 ft. (See photo A on page P-1; map on page M-3.)	83
6	Prahova R Br	44° 49' N..... 26° 02' E	Bucharest-Ploesti double-tracked Ry, carrying heaviest traffic in Rumania. Lattice girder construction. Length: 390 ft. (See map on page M-4.)	6
7	Jalomitsa R Br	44° 45' N..... 26° 02' E	Ploesti - Bucharest Ry. Double - tracked, carrying heaviest traffic in Rumania. Length: 300 ft. Height: 3 ft 4 in above high water. Iron superstructure. (See map on page M-4.)	7
27	Teleajen R Br	44° 57' N..... 26° 08' E	Ploesti-Buzau double-tracked RR E of Ploesti. Length: 726 ft. Height: 24 to 30 ft above normal water level. Iron superstructure. (See map on page M-4.)	27
26	Cricovul R Br	44° 57' N..... 26° 13' E	Ploesti-Buzau RR at Albesti. (See map on page M-4.)	26
19	Prahova R Br	45° 05' N..... 25° 45' E	Ploesti - Campina - Brasov double - tracked RR, S of Campina. (See map on page M-5.)	19
POWER				
80	Floresti Electric Power Sta	45° 02' N..... 25° 48' E	Supplier for oil industry. Cap 6300 KW. 2/3 mi W of Baicoiu Ry Sta on Ploesti-Campina-Brasov Ry. (See photo K on page P-7.)	None
81	Campina Electric Power Sta	45° 07' N..... 25° 45' E	Supplies oil industry. Cap 22,950 KW. SW of Campina on Prahova R. (See photo J on page P-6; map on page M-5.)	None

TABULATION OF TARGET INFORMATION

TARGET NO.	TARGET NAME	APPROXIMATE COORDINATES	DESCRIPTION AND SIGNIFICANCE	TARGET CHART NO.
MUNITIONS				
83	Concordia Munitions Fcty (Ploesti)	45° 56' N..... 26° 03' E	AA guns Schneider-Creusot type, artillery shells. Area approx 700 x 500 Yds. Bldgs brick, concrete roofs. NW Ploesti S Sta. (See map on page M-3.)	83
MILITARY AIRBASES				
140	Strejnicul Adrm	44° 56' N..... 25° 57' E	2½ mi WSW Ploesti, 1½ mi SW Ploesti-Campina Ry and Ploesti-Darmanesti Rd Jc. Area 3000 x 3300 ft. Hangars, shops. GAF fighter base. (See map on page M-4.)	None
141	Targsorul Nou Adrm	44° 55' N..... 25° 56' E	SW Targsorul, 5½ mi WSW Ploesti. Area 3300 x 3900 ft. Hangars, fuel, all facilities. GAF fighter aircraft base.	None
142	Ploesti N Adrm	44° 58' N..... 26° 03' E	2 mi NE Ploesti, adjacent Buzau Rd, (No details available)	None
143	Ploesti Air Base	44° 56' N..... 25° 58' E	SW Ploesti-Campina and Ploesti-Darmanesti Rd Jc. Area 4950 x 3300 ft. Fueling facilities. Alternate of Strejnicul, Target 140.	None
144	Floresti Air Base	45° 04' N..... 25° 47' E	N of Floresti, NW Baicoiu, between Rd and Ry to Campina. Area 2100 x 900 ft. Fighter aircraft base.	None

... concluded

REVIEW OF TARGETS

TARGETS 4, 6, 7, 19, 26, 27 The transportation targets in the Ploesti Objective Area consist of 5 railway bridges and the main Ploesti railway yards. The bridges are situated on the lines which carry the Ploesti petroleum production to Central Europe, and the Russian Fronts. 80% of the oil leaving this area moves by rail.

The structures over the Prahova River **TARGET 6** and the Jalomitsa River **TARGET 7**, south of Ploesti, are the largest of the group of bridges. The Prahova River Bridge **TARGET 6**, south of Ploesti, carries the pipeline to Giurgiu. The size and simple construction of all the bridges would indicate that their repair or reconstruction could be made in a short time.

TARGETS 38, 39, 40, 41, 45, 50 Priority should be given to these refineries as they are the largest in

Rumania and contain important cracking units. All of the refineries include a considerable amount of tank storage, but, in general, this is not an economical target; the vulnerable units of the refineries being the stills, cracking installations, polymer, lube oil and hydrogenation equipment.

TARGET 48 The Constantsa Pumping Station should be considered in conjunction with **TARGET 38**. The former station could perform the pumping functions for the latter in the event of emergency.

TARGETS 140, 141, 142, 143, 144. The principal air fields in this area are grouped very near Ploesti with the exception of Floresti **TARGET 144**, which is situated between Ploesti and Campina. In addition to these bases there are numerous landing grounds throughout the area.

PHOTOGRAPHS OF PLOESTI AREA

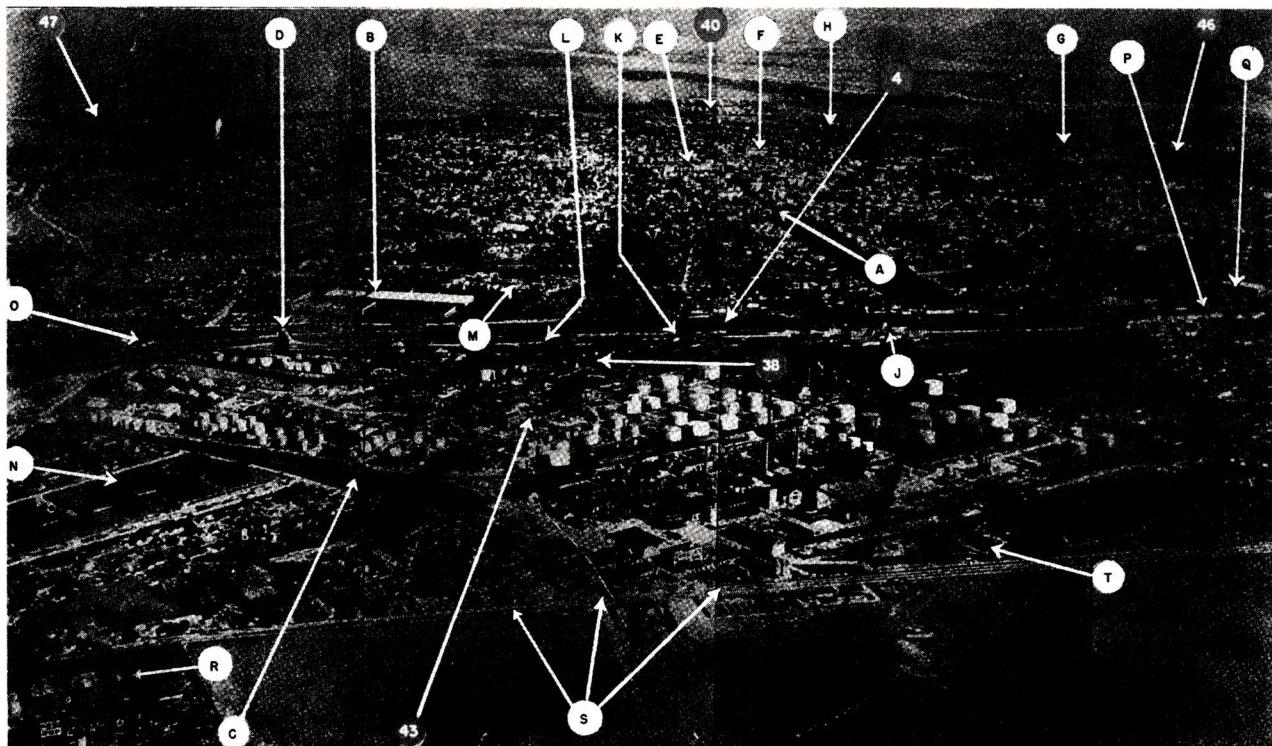


PHOTO A... Air view of Ploesti, Rumania — looking N from S Ploesti.
Symbol Q locates **TARGET 83.**

LEGEND

LAND MARKS

- A. Circle, end of boulevard and trees.
- B. Munitions and Shell Casing Plant.
- C. Railway Sidings of Astra Romana Refinery.
- D. Overpass over Railroad.
- E. Public Building Area.
- F. Technical School.
- G. Cometa Refinery.
- H. North Railway Station and Yards.
- J. South Railway Station.
- K. Noris Refinery.
- L. Alumina Refinery.
- M. Fratia Refinery.
- N. Astra Romana Storage Tanks.
- O. Railroad Roundhouse.
- P. Overpass over Railroad.
- Q. Concordia Shops.
- R. Construction Company.
- S. Main Roads.
- T. Chimney.

REFINERIES

- 38. Astra Romana.
- 40. Vega.
- 43. Orion.
- 46. Redeventa.
- 47. Xenia.
- 4. Main Freight Yards.

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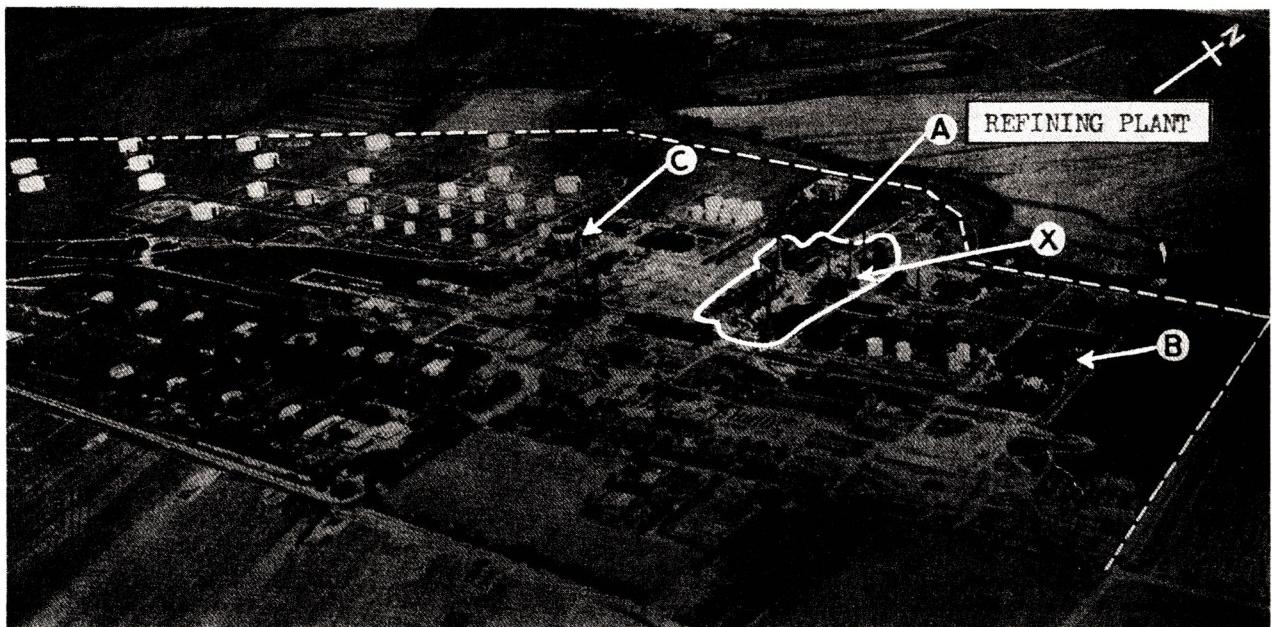


PHOTO B...TARGET 39 – Romano Americana Refinery. The area outlined and marked A contains the refining plant and is the vital point.

X—probably the Power Plant.

B—Plant dependent on A.

C—Plant dependent on A.



PHOTO C...TARGET 39 – Romano Americana Refinery. Prahova District.

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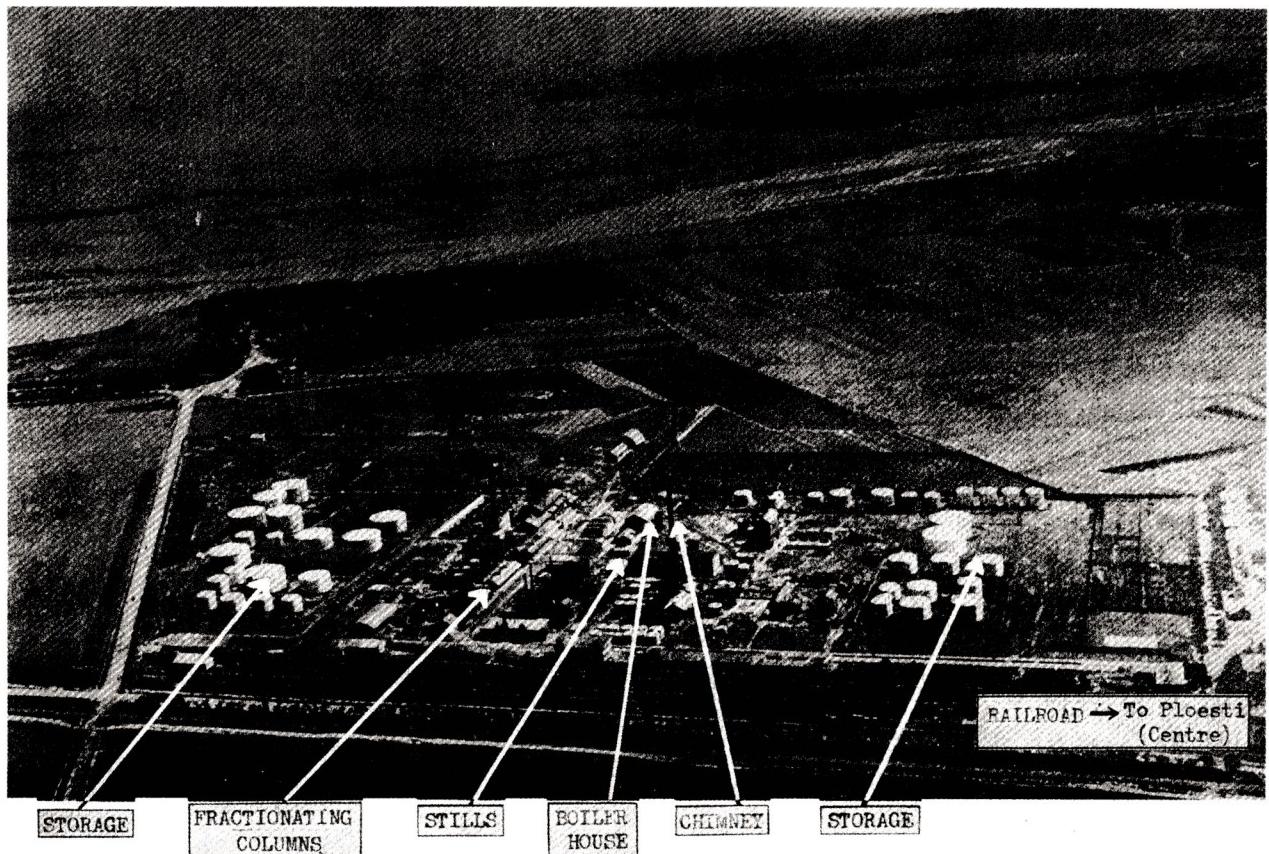


PHOTO D...looking ENE, **TARGET 40** – Concordia Vega Oil Refinery.



PHOTO E...(1929), looking W **TARGET 40** – Concordia Vega Oil Refinery.
TARGET 46 – (in distance) Redeventza Refinery.

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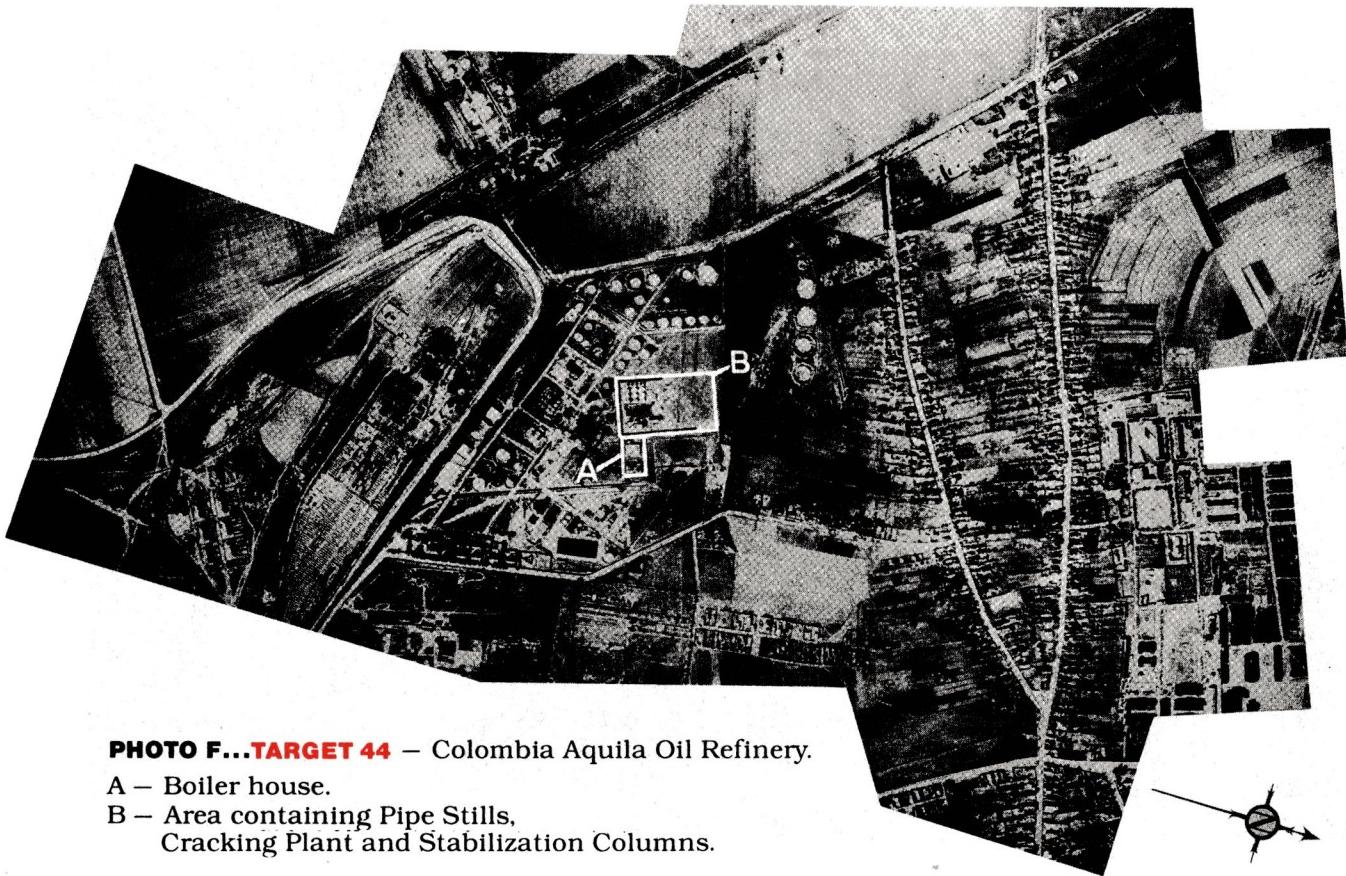


PHOTO F...TARGET 44 — Colombia Aquila Oil Refinery.

A — Boiler house.

B — Area containing Pipe Stills,
Cracking Plant and Stabilization Columns.



PHOTO G...TARGET 44 — Colombia
Aquila Oil Refinery.

A — Boiler house.

B — Area containing Pipe Stills,
Cracking Plant
and Stabilization Columns.

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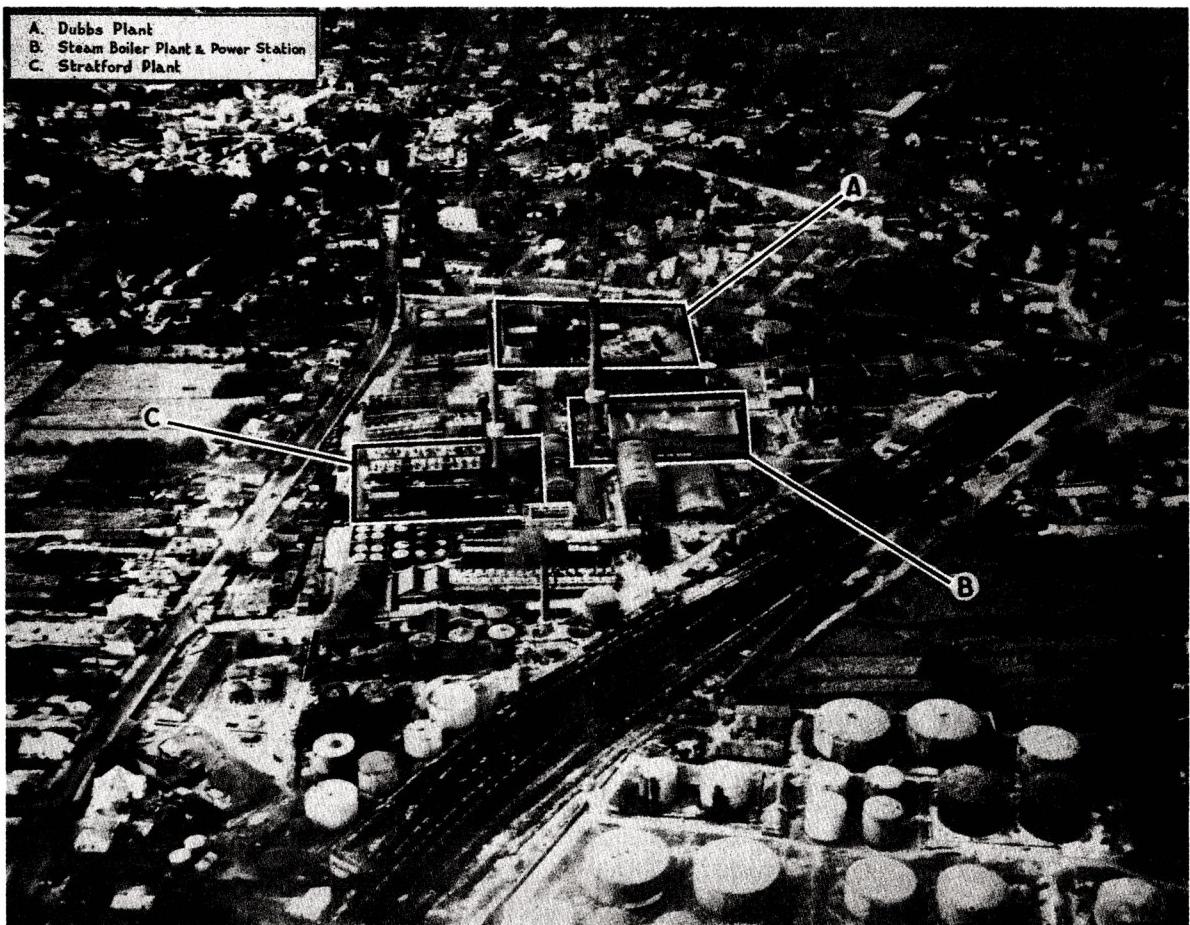


PHOTO H...CAMPINA, looking SW, TARGET 50 – Steaua Romana Refinery.

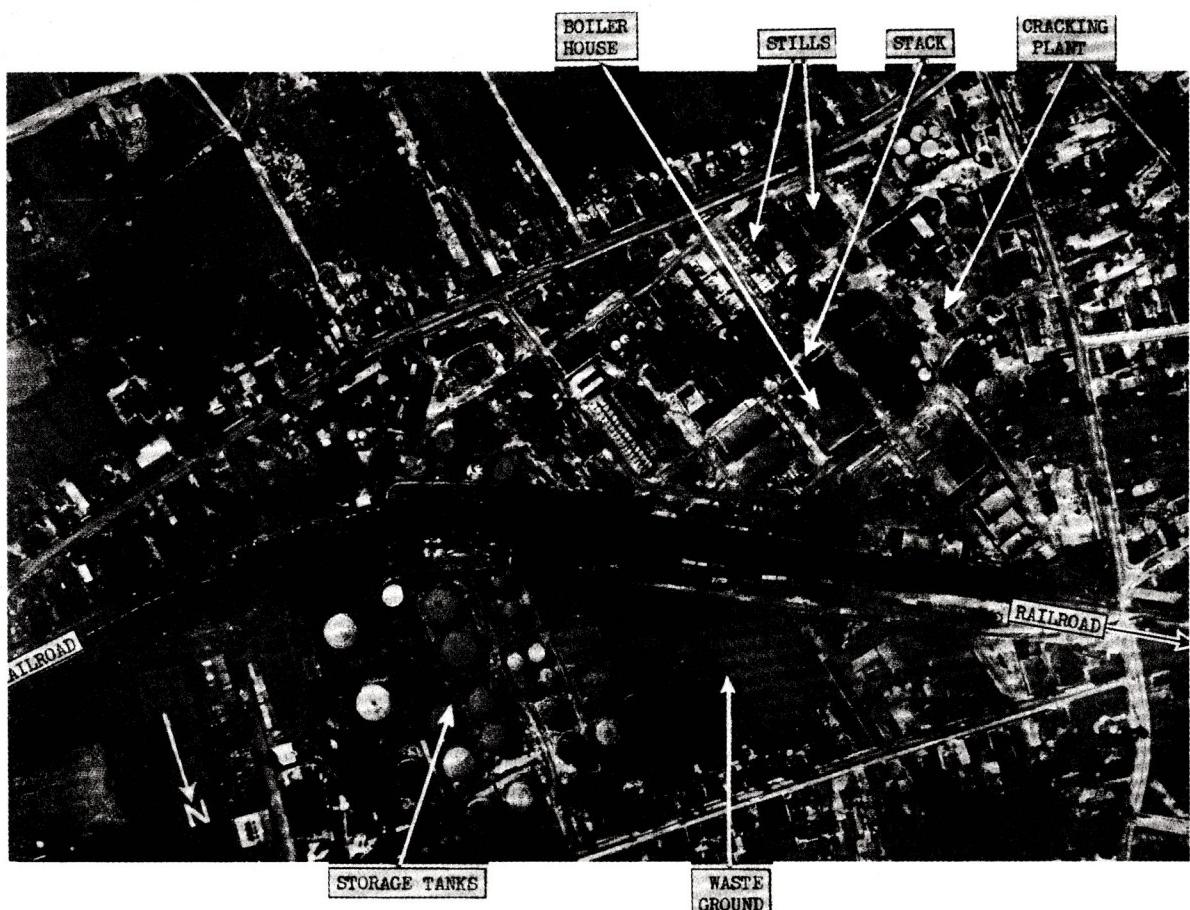
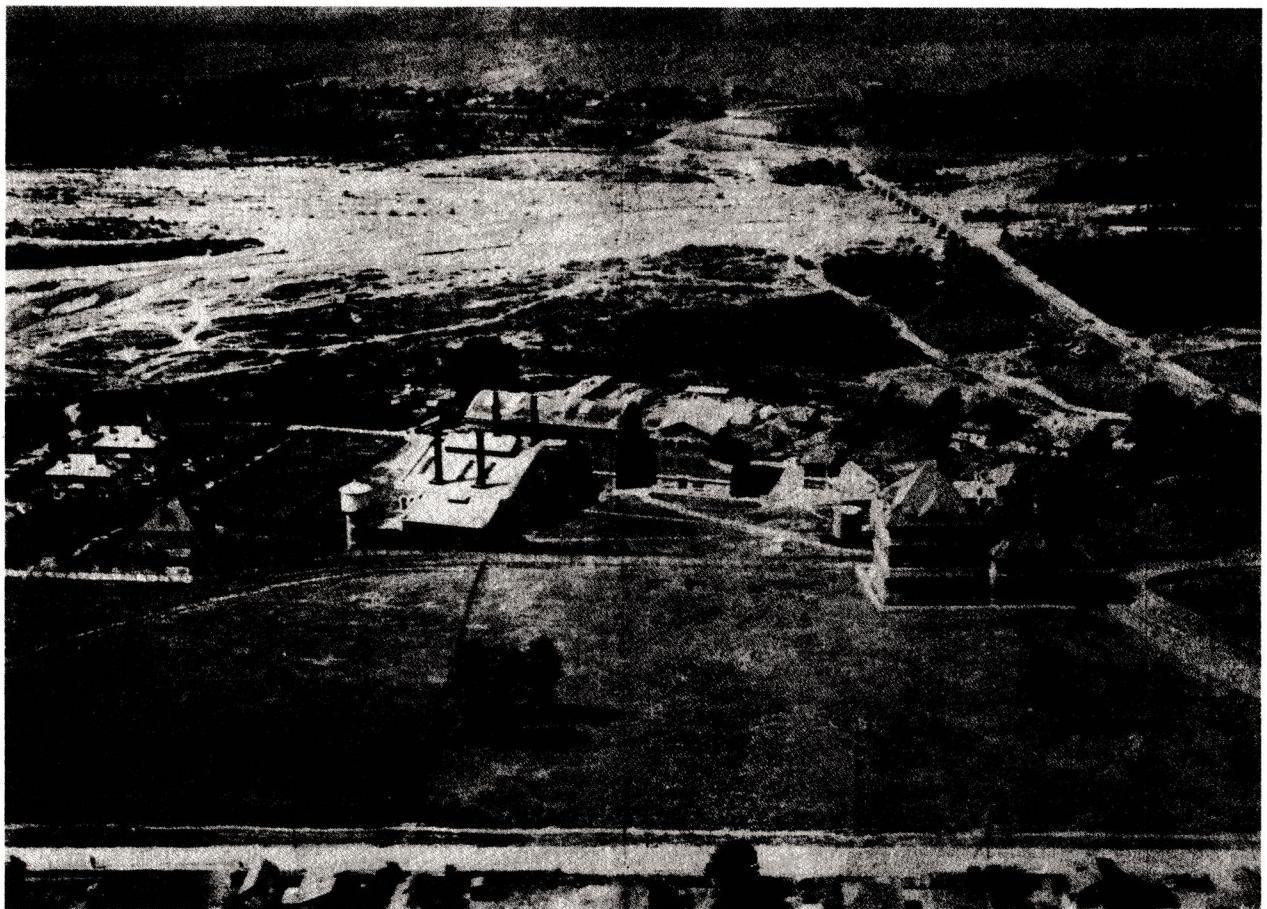


PHOTO I...CAMPINA. TARGET 50 – Steaua Romana Refinery.

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**PHOTO J...CAMPINA (1929), probably looking W.
TARGET 81 — Campina Electric Power Station.**



**PHOTO K...FLORESTIT (1929), looking W.
TARGET 80 — Floresti Electric Power Station.**

SECRET

MISSION NO. 37 (Plan BAKER)

5 May 1944

BATTLE ORDER

0345	13. Air-Sea Rescue:
0450	VHF "D": Radio Op's on 4535 KC's.
0525	ARS Launches VHF "A".
0540	
0615 - 0625	
0625 - 0635	
0630	
0741 Spinazzola	
1007	
1345	

1. Breakfast: 0345
- Briefing: 0450
- Transportation: 0525
- Stations: 0540
- Start Engines: 0615 - 0625
- Taxi Out: 0625 - 0635
- Take Off: 0630
- Assy Area: 0741 Spinazzola
- Target Time: 1007
- Time of Return: 1345

2. **Leader:** Major Billings
Deputy Leader: Capt. Gray
2nd Attack Leader: Major Newby

3. **Rendezvous:**
Lead 460th (2000'),
485th (3000') over Spinazzola.
464th (2000') & 465th (3000')
fall in behind at Spinazzola.

4. **Order Of Flight:**
Loose column of wings:
55th (460th, 465th first wave;
464th, 465th second wave).

5. **Route Out:**
Spinazzola to Andria to [x650,
y180] to control point 20 miles
south of Tirgoviste to IP 20 miles
south of Ploesti to target.

6. **Point of Climb:** Follow lead group.

7. **Fighter Rendezvous:**
P-51's at 0655 route out.
P-47's at 0940 target.
P-38's at 1035 route back.

8. **Bomb Load:** 10-500# G.P.

9. **Gas Load:** 2700 gallons.

10. **Bombing:** 155 MPH;
460th - 16,000'; 464th - 16,500';
465th - 17,000'; 485th - 17,500'.

11. **Route Back:**
Rally 10 miles east of Tirgoviste,
then to [x650, y140] to 20 miles
south of Spinazzola to home.

12. **Radio Procedure:**
Bombers to fighters VHF "A".
Group to Group VHF "B".

13. Air-Sea Rescue:

VHF "D": Radio Op's on 4535 KC's.
ARS Launches VHF "A".

14. Bomber Call Signs:

460th Gp - CLEARSOUP Leader
464th Gp - CLEARSOUP 2
465th Gp - CLEARSOUP 3
485th Gp - CLEARSOUP 4

15. Fighter Call Signs: PLATOON

16. Recall Signs:

55th Wing - PORTRAIT

17. (a) Turn IFF on immediately after take off. Turn off at [x300] going out.

(b) Turn Carpet on when IFF is off and turn Carpet off when IFF is turned on.

(c) Two (2) cartons of chaff will be loaded in each ship of the 1st Atk Unit dispensing according to SOP, four units every twenty(20) seconds from IP until clear of flak.

(d) Boxes will break off at IP for individual runs. Boxes will reform in Group Formation after rally.

(e) At Control Point, 460th & 485th will execute a 360 deg. turn and then continue on course maintaining at least ten (10) minute interval between second and third groups.

(f) There are no alternate targets. Only targets specified will be bombed.

(g) Any convoy encountered will be avoided.

(h) Group Leader will fire a double green flare to designate IP and as a signal for boxes to break off.

(i) Box leaders will report results of bombing to Group Leader on 4040. Group Leader will report bombs away as follows: three (3) boxes MSOK; one (1) box MFOK.

(j) This Flimsy will be turned into the Intelligence Officer at Interrogation.

B-24 AT I

Ploesti — 1598-1942

Underneath the Prahova Valley lurked one of the world's best-kept secrets—an abundance of latent energy in the form of crude oil; black gold, as it later would be known.

Nature tried to reveal its secret, as the local stained black sheep unwittingly advertised—those that had been lolling around in the gullies of Pacureti, where the crude oil gushed out in mud volcanos. No one paid attention to the blackened sheep. The unquenchable flames leaping out of the several crevices in the area also went unquestioned. The secret was safe.

Following his resounding success against the Turks, Michael the Brave set out with his army for Transylvania in Rumania, far across the Wallachian Plains. The warrior paused as he reached the entrance to the beautiful Prahova Valley, virtually impassable with its narrow gorges and untrodden forests, cutting and twisting its way through the Carpathian foothills and mountain. Impressed with its beauty and topography, he established camp there to prepare for the coming invasion of the future lair of the legendary Count Dracula.

The following year, 1599, Michael the Brave was crowned Prince Michael the Brave.

Two years later the Prince would be defeated by the Polish forces commanded by Zamoski, but his campsite survived, and one day would become the world's first oil boom town—Ploesti (Plo-ESS-tee).

by Leroy

Many consider the significant birth of the city to be 1856, when that first oil refinery was built (three years before Edwin L. Drake, a retired railroad conductor, struck oil in Titusville, Pennsylvania).

Oil's commercial possibilities became apparent when nearby Bucharest became the world's first city to have gas lighting.

Fifty years later there would be ten or more oil refineries ringing Ploesti, with names like "Romano Americana," "Concordia Vega," "Steaua Romana," "Unirea," "Astra Romana" and so on—names that would be so familiar to young Americans and Britons who would not yet be a gleam in their fathers' eyes for another dozen or so years.

As the beautiful city of Ploesti entered the oil age it was called the white town of black gold. Oil was always in the air. In the summer the fragrance of flowers competed with the aroma of oil. The winter snowflakes smelled of oil. Twilight was always purple in Ploesti. Often a traveler arriving by train would remark, long before he sees the city, "There is the smell of oil; we must be getting near Ploesti."

PLOESTI

W. Newby

On June 11, 1942, the streets of Ploesti were filled with strollers. Parks abounded with picnickers. Swimming areas were packed with families enjoying themselves on a sunny day. It was a carefree community, not yet involved in the realities of war.

That night the first bombs fell on Ploesti. Just a few, and they landed without effect in the outskirts near the Astra Romana refinery, the largest in all Europe.

A new smell was in the air—the smell of war, and of death.

HALPRO

American military forces around the world had been reeling under Japanese attack ever since Pearl Harbor, suffering defeat after defeat. Home front morale was near the breaking point.

Suddenly there was hope. On April 18, 1942, Lt. Col. Jimmy Doolittle led 16 B-25's from the deck of the carrier Hornet straight to the heart of Japan—the famous "Thirty Seconds over Tokyo" that served notice America wasn't dead. Americans everywhere responded like their city had just won the World Series.

In early May, the Navy followed up with a striking victory at the Battle of Coral Sea. The Navy then began its slow march, island by island, toward the Japanese mainland.

Later in the month, against this backdrop of the taste of victory, the United States went for another morale booster when twenty-three bomb-laden B-24 Liberator bombers were dispatched from a Florida air base—destination Tokyo, nearly 10,000 miles away. When the attack force, known as HALPRO (Halverson Project No. 63), reached Khartoum, its plans were changed. The Japanese had captured the last stopping point Chinkiang on the east coast of China, so HALPRO was ordered to bomb the oil refineries at a place called Ploesti, Hitler's main source of oil for his war machine.

On June 5, the United States declared war on Rumania, Hungary and Bulgaria to make the Ploesti attack legal. These countries had previously declared war on the United States, but had been ignored up until this time.

The B-24 Liberator bomber had not yet been in combat in the European Theater under American colors; American Air Forces bombers had not yet made a bombing attack in that theater; American Air Force Bombers had never flown a 2500 mile round trip mission; but, on the night of June 11, thirteen HALPRO bombers departed Fayid, Egypt to achieve a triple first, even though only one plane made it to the target.

Little damage was done to the refineries, so the only significant result of their historical effort was to alert Germany that Ploesti could be had.

HALPRO Aftermath

"Gentlemen, this is the beginning. They will be back." announced Luftwaffe Colonel Alfred Gerstenberg at a hastily called meeting in Bucharest.

The German officers in attendance at the meeting were among the very few people in the entire world who even knew the attack had taken place. Ploesti inhabitants generally were unaware of the attack, as the few bombs dropped landed outside the perimeter of the city limits, and not on the refineries proper.

The Bucharest press ignored the incursion. The German press was silent. Neither the United States nor British press reported it. This historic American attack was not even mentioned in official military communiques. It was indeed a hidden mission. It never existed; but don't ever tell the over three dozen American flyers who were interned in Turkey that it didn't exist. Especially after they heard on the radio a few weeks later that England-based American bombers had just made America's *initial* bombing attack on German occupied territory.

While the fact of the mission was suppressed, the result had a profound effect on the world. From that moment on two great world forces began preparing to face each other in one of history's greatest military battles.

Gerstenberg, soon to be promoted to general, began developing a defensive mode for the Ploesti oil refinery, the likes of which had never been seen, or even dreamed.

He built a perimeter pipeline around Ploesti, linking all the refinery units. His plan was that if some storage tanks were hit and the refineries themselves were intact, neighboring tanks could be used on a pool basis. The same would hold for destroyed refineries with intact storage tanks.

The key to all this was in positioning exposed pipeline above ground so that it could easily be repaired. This proved to be very successful. One problem, though, was created by the objections of the various plant managers to sharing their facilities.

Allied Intelligence knew nothing about this pipeline arrangement until the capture of Ploesti! Circular cement and brick walls up to twenty feet high and nearly four feet thick were erected around sensitive areas within each refinery. Each oil tank had a wall around it to contain the contents if it were ruptured by bombs.

Two dummy "Ploestis" were constructed to try and fool the bombers, one about thirteen kilometers northwest and the other about twelve kilometers east of the real Ploesti. Gerstenberg's flak defense is a story in itself.

Mission Planning

The planners on the other side of the Atlantic were more directly concerned with the effort of the 9th Air Force, whose bombing activities were paving the way for the British 8th Army in its westward advance from Egypt into Libya. British air bases were being set up behind their advancing lines as fast as possible. When Benghazi was captured, the U. S. 9th Air Force moved in with bases of its own . . . bases that were two hundred miles closer to Ploesti than Fayid was.

In January, 1943, Churchill and Roosevelt were meeting in Casablanca, 1600 miles west of Benghazi, to ponder the next move once Rommel was defeated in Africa. Churchill, knowing Stalin favored a Balkan invasion to help his cause and Roosevelt opposed it, chose not to bring up the matter at the meeting. Others brought it up and Roosevelt vigorously opposed the move, as expected. The plan was dropped in favor of a Sicily invasion.

The subject of Ploesti came up at the meeting: its destruction would help relieve pressure on both the Sicily invasion and the Russian front.

An additional reward for the destruction of Ploesti's oil refineries would be the elimination of more than a third of Germany's gasoline and oil production for its war machine.

Once Ploesti had been marked for destruction and the 9th Air Force had been tapped for the job, there remained only the method of carrying out the objective, and timing. The timing was simple: somewhere between the end of the Africa campaign and the Sicily invasion. The how of the attack was not quite as easy.

Colonel Jacob Smart was assigned the task of destroying the Ploesti oil producing capability. He considered many factors never before faced by a planner of a bombing mission: how to get a formation of nearly 200 bombers, without fighter escort, to a target about 1200 miles away, flying over unfamiliar terrain with no available maps; how many bombs must be sacrificed for extra bomb bay fuel tanks; how to effect the maximum destruction on twelve refineries; and how to get the bombers home.

After much soul searching, Smart came up with the key to his dilemma ... a low level attack. The unprecedented audacity of the plan was overwhelming to many, but it seemed to address most of the main voiced concerns. A formation of bombers flying at ground level would certainly escape radar detection enroute and near the target area, and increase the chances of surprise. Not having to climb to and maintain an altitude of 20,000 feet would conserve gasoline. Assigning each bomber a specific aiming point would assure far more accuracy in bombing than was possible with high level bombing.

Even with a Norden bombsight, a refinery was difficult to knock out from high level. The reason was that a refinery usually occupies about a square mile of land, and on that property are about half a dozen key

structures: pumping station, power-house, cracking tower, still, boiler house and others. A formation of bombers dropping bombs can have a beautiful bomb pattern (excellent for a factory) but all six structures scattered over a mile of land are unlikely to be badly damaged. Individual aiming points would also reduce civilian casualties and damage.

Flak batteries would have a far more difficult time hitting bombers at such close range, and hugging the ground would cut the German fighter's sphere of attack—two points highly favored by the crews. Of course, on the negative side was the vulnerability to small caliber anti-aircraft fire and barrage balloons. A psychological plus might be the opportunity for normally defenseless airmen, now armed with .50 caliber machine guns, to fight back at their ground tormentors.

The defeat of Rommel in May enabled the allied planners at the Trident Conference in Washington to move up the Sicily invasion to July 10th. With General Marshall's strong backing, the Ploesti attack received the conference's official blessing. TIDAL WAVE was born.

TIDAL WAVE

On August 1, 1943, an event took place that directly touched millions of lives. Over 1700 airmen were briefed on a daring 2500 mile round trip to bomb Hitler's main source of oil for his war machine. They were to fly at tree top level to Ploesti, Rumania, to bomb at 20 to 30 feet. An unprecedented military maneuver ... intended to surprise the enemy.

A general visited the five air bases involved and told the airmen that if they destroyed their targets and NONE of them returned, the mission would be considered successful.

He further told them that Ploesti oil was so crucial to Germany's waging of the war that the destruction of their targets would probably end the war by Christmas. The enormity of their objective was not even known to the planners.

Think of the lives that would be touched by this one mission. How many soldiers' lives were lost between Christmas, 1943, and May, 1945, when the war in Europe finally ended? Certainly hundreds of thousands. How many Jews were executed in the holocaust during that period? Probably millions.

Those millions of lives were unknowingly touched by those 1700 airmen: by the kiss of death if the mission failed. Or by the extension of their lives if it succeeded.

The plan was to dispatch 178 B-24 bombers, each with four 1000-pound bombs and two bomb bay fuel tanks. They were to fly in formations of about 35 planes per group. At the Initial Point (start of the bomb run) they would split into waves of from three to ten abreast and go in at 20 to 30 feet off the ground.

Their objective was to destroy the seven largest refineries at Ploesti.

The mission was fraught with disaster from the outset: one plane crashed on takeoff, killing most aboard. The lead plane, containing the mission navigator who had received a special briefing on how to find Ploesti, crashed into the sea. The deputy lead plane, containing the only other navigator to receive the special briefing, aborted and went home.

While over the Mediterranean, the giant air armada flew over a German submarine which had surfaced to charge its batteries. The sub no doubt radioed ahead what they had seen—so surprise may have been lost as they got under way. Soon after reaching land, they came across a cloud formation ranging up to 16,000 feet. Some went through and some went over the top. The result was that two groups, with their short-fused bombs, got 60 miles ahead of the other three groups, and visual contact was lost.

When the two lead groups got within 60 miles of Ploesti, flying at tree top level to stay under the radar, they encountered a summer squall that made visual navigation difficult. In the mist they turned at the wrong town and followed the barely discernible railroad tracks that were expected to lead them to the refineries at Ploesti . . . but the tracks they followed led to Bucharest, some 30 miles south of Ploesti. This errant course took them directly over the Fighter Command Center for all Rumania. Murphy's Law was working overtime this day.

When they realized their error one group turned and headed north to Ploesti, and the other circled east of the city and came in from the north. Both lost groups attacked refineries assigned to other groups. No doubt anyone in their shoes—having traveled all that distance and with a bomb bay full of bombs, 30 feet off the ground, moving at over 200 mph in strange territory, and having no idea just where their assigned target was—would have done the same thing. "There's a refinery dead ahead, let's hit it, and get out of here!"

Meanwhile the other groups found their way to the briefed Initial Point and went down the correct railroad tracks to their assigned targets. And what a surprise they had waiting for them!

The groups attacking their assigned targets were astounded to see smoke and fire awaiting them, but they had no choice but to plow through the flames. One group of twelve bombers went into the mess and only nine came out. Some came out only to see other bombers converging on them from the side. Some had to bank their plane to avoid a 100-foot smokestack. Their training had not prepared them for this turn of events, but they all reacted in exemplary fashion. They knew why they were there; one pilot, his plane trailing flames for a hundred yards, and no hope of crash landing his plane or bailing out his crew, steered his coffin into a powerhouse.

The three groups that went to their briefed Initial Points made successful bomb runs on their assigned targets and knocked them out of service for from several months to forever.

The actual battle lasted less than half an hour, and in that time more firepower was expended than at two Gettysburgs; more men were killed in the air than on the ground; five men were awarded the Medal of Honor for gallantry (the Air Force awarded only 36 in the entire war.)

For those surviving the hell of Ploesti, the worst part was yet to come—the trip home in the unfriendly skies of the Balkans: most planes were short on gas and many had engines or controls shot out. Many were shot down as they fell behind the protection of the formations. Over twenty landed in neutral countries. Several ditched in the sea.

Of the 165 planes reaching the target only 88 made it back to Africa. Only 33 of those were airworthy to fly a mission the next day.

Production at Ploesti was cut by 40% but activation of some unused facilities returned it to full force in a couple of months.

Sadly, the war did not end by Christmas, and the terrible death toll continued to mount until May of 1945.

The failure to destroy the entire target as planned was not due to the air forces being turned back. In fact, no U. S. Air Force combat unit was ever turned back by enemy action!

15th Air Force

On August 1, 1943, the crew of *Hangar Queen* did not yet exist as an entity, but each of its eventual ten members heard the stupefying news at their training centers where they were learning their respective military specialties: pilot, navigator, bombardier, engineer, radioman, and gunner. In October they would meld into a combat air crew, a fighting team, as part of a new offensive weapon being prepared for the final assault on Germany.

This new weapon was not yet in existence on the day Ploesti became somewhat of a household word, but by October, military planners would be forming a new powerhouse, the Fifteenth Air Force, to be based in Italy under the command of Gen. James H. Doolittle. Six heavy bomb groups from the Twelfth Air Force in North Africa would form the nucleus, and would be augmented by fifteen Heavy Bomb Groups being groomed for the Eighth Air Force in England, to be diverted to the Fifteenth under the new plan.

The Fifteenth Air Force would have four main objectives, with priorities as follows:

1. To destroy the German Air Force in the air (by making it come up and fight) and on the ground, wherever it was within operational range.
2. To participate in POINTBLANK (the joint Eighth Air Force and Fifteenth Air Force bomber offensive), which called for the destruction of Germany's war-making capabilities. Factories, oil refineries, oil transportation, and naval bases would be key targets.
3. To support the battle of the Italian mainland (mainly attacking communication targets in Italy along the Brenner Pass route, and also in neighboring Austria).
4. To weaken the German position in the Balkans.

The High Road to Ploesti

A few excerpts from chapter 4 of *TARGET PLOESTI: View from a Bombsight* depict the *Hangar Queen* crew's reaction to its first trip to one of the toughest targets in the world.



On the last day of our long stand-down, we all dressed in Class A uniforms and reported to the drill field. Gen. Nathan O. Twining, Commanding General, Fifteenth Air Force, had come to pin the Air Medal on those who had completed five missions. It was a nice shot in the arm and gave us a running start for the events of the following morning, when the blue yarn on the stage map went to our mecca Ploesti—for the first time.

"Gentlemen, today is a milestone in the history of the 460th," began the briefing officer as the impact of the blue yarn settled in. "We make our first strike on Ploesti, the heart of Germany's oil production." He certainly had everyone's attention. We had been awaiting this moment, and all the side conversations and shuffling in our seats came to a quick halt.

He told us that our specific target was the Xenia Refinery on the northwest edge of the city. Xenia was one of the smallest of the important refineries in the Ploesti area, but its tank farms (storage tanks) were a vital cog in the overall oil production for the entire area. It had been virtually ignored in the low-level raid of last August, so it began handling most of the crude from the neighboring oil wells, which could not be put through the larger refineries for awhile, due to the damage inflicted on them. Xenia had been rested for the previous few months, but was being pressed back into service again because of the renewed attacks on the big refineries.

He then told us that our job was to destroy the tank farms and the nearby distilling unit—and the 460th could do it! There was no cheering or back slapping as happens after a pep talk in a football locker room. Our low murmur of appreciation said all that needed to be said at the time.

He told us we wouldn't be alone up there. About a dozen or so other groups would be hitting various targets in the Ploesti complex at the same time. He continued with more details about the location of the IP, bombing altitude, and other information. Then another officer stepped up to the podium with the "gloom report."

"There are several hundred anti-aircraft guns at Ploesti!" Our hearts sank as we thought of what just four guns could do at Mostar. "However," he continued, "they are deployed in a large circle twelve miles in diameter surrounding Ploesti, so it isn't as bad as it sounds." Pause. "It just means there is no way into the target without flak activity."

The officer wouldn't quit. "The German high command is probably aware by now that Ploesti is a prime target for the Fifteenth Air Force, so we can expect not only the Balkans air force to meet us enroute, but a portion of the Central air force too. Fighter action will be heavy, but our fighter protection is improving and if we keep up the great tight formation, the fighters will be the least of our worries." We all chuckled inwardly at the words, "we" and "our" coming out of someone not planning to come along.

While flying high above the clouds, I found the sight from my side window so dramatic, I forgot about Ploesti for a few moments. I was struck by the contradiction of the beauty of 500 four-engine bombers in orderly formation, a thousand contrails streaming behind, forming a spectacular skyscape on a peaceful morning, with its purpose soon to be revealed.

When my bomb-pin pulling detail was completed, I began calculating the input data for my bombsight. I checked my bombing tables for the type of bombs aboard, plotted the target temperature and barometric pressure reading, and read off the information to be entered into the bombsight. After setting the bombsight drift angle for the expected degree of drift on the bomb run, I sat and waited for the moment to turn on the sight. The heater that was supposed to be able to heat a five-room house was not working. The higher we climbed on course, the colder it got, several degrees about every thousand feet. The temperature was expected to be minus sixty at the target, and it seemed that cold inside the drafty nose compartment—but I knew it would become warmer once we arrived. Finally, I turned on the bombsight. Although I had previously double-checked my figures, I rechecked them. All seemed OK.

The evening after a mission, a lead bombardier was either a hero or a bum. If he lined up the run-in badly, and the entire target was missed and perhaps a plane or two went down, he would not be looked upon very kindly. Nasty words were sometimes spoken—and not in jest. On the other hand, if he did a good job and the target was clobbered, his compatriots couldn't buy him enough drinks and say enough nice things to him. *Would I be a hero or a bum tonight, providing I got back?*

I was roused from my musing by the report of fighters about three thousand feet above us, but after a few anxious moments we were assured they were P-51 Mustangs. That little exchange reminded me I had yet not put on my flak suit and flak helmet. Neither had Sherm (our navigator), so we helped each other into our flak suits—not really that difficult a task, but much easier with help.

A flak suit always reminded me of a "sandwich board" carried by "sandwich men" roaming the streets of downtown Pittsburgh, with their advertising signboards hanging front and back, hinged at the shoulders. Ours, of course, were made like a canvas apron hanging front and back with many overlapping sections of metal, smaller but thicker than a playing card, sewn into individual pockets. This gave protection against spent flak, which was just as deadly as fresh flak if it hit your body. A flak suit would not stop a machine gun bullet.

By now the undercast was breaking up and it looked like about a 5/10ths undercast dead ahead. Not good, but not as bad as 10/10ths. We might luck into a good sighting.

Sherm was making log entries every five minutes and I knew he would tell me, at some point about ten minutes from the IP, if there were any appreciable changes in the target weather figures so that I could refine my bombsight data. I was far more nervous about my upcoming *performance* over the target than I was about the danger itself.

"Newb, the weather data looks OK to me." Sherm finally said. "Roger," I replied with much relief. *No changes; all I have to do is find the target*

"Lead bomb bay doors are opening" called out nose gunner Bob Kaiser. I immediately opened our bomb bay doors and flipped the bomb "train" switch, and eight amber lights lit up on the board overhead, one for each bomb position. Sherm nudged me. I arose and he pointed out the right window. I stood transfixed as I gaped at the incredible sight of Ploesti. *My God, I'm here!*

Over The Target

There wasn't a natural cloud at our altitude, but it was cloudy high over Ploesti. Not over the city proper, but the groups of black polka-dot clouds formed a protective ring around the city, a concentration over each of the refineries under attack. It was reminiscent of the circled wagon trains of our Wild West days. Two miles above us were several white polka-dot cloud formations—compliments of the flak batteries to the high-flying B-17's. The Fifteenth Air Force was simultaneously attacking all of the refineries encircling Ploesti. At least this would spread the flak around. The black clouds were from German Flak 37 guns that fired 88mm shells weighing over twenty pounds, at a rate of fifteen to twenty rounds per minute. These could reach 26,230 feet and were intended for our B-24's. The white clouds were from Flak 39 guns that fired 105mm shells weighing over thirty-four pounds. These were for the B-17's at 30,000 feet. B-17's were also favorite targets for the relatively new Flak 40 guns that fired a 128mm sixty-two pound five ounce shell, and were mounted on railroad cars.

The black and white clouds came in various sizes and shapes. Small, sharply jagged clouds were the fresh ones, and they were potentially harmful if they were too near you. If you saw the red flash that occurred just before it was surrounded by the sharp cloud, there was a good chance for some of it to hit your plane. Seeing a red flash was a relatively good sign though, because it meant you were still alive. Larger, more rounded puffs were past history. They had done their damage but were mute reminders that there were more from where they came.

The really startling sight was the nearest huge block of black puffs in the sky—at our altitude, and off to the right. We weren't there yet and

they had already set up a barrage of flak! Then I saw why. *Somebody's* target was ablaze. The distinctive narrow column of black smoke that always identified a burning refinery target was pushing up through the low natural white clouds that seemed to be trying to protect the cluster of targets. High above the smoking target, bomb bays empty, thirty-five B-24's were turning southeast, heading for home, their crews thankful to have made it through the most concentrated flak barrage of their experience so far—although they had left a crew behind at Ploesti.

The principle of the barrage, as opposed to predicted fire, was to establish a large box in the sky consisting of bursting flak at or about the bomb release point. This huge flak box was much larger than the mass of a bomber formation, in order to make certain the formation entered the living box of streaking steel. The flak gunners, each firing a round every three or four seconds, would simply keep it filled with flak bursts. They knew the formation of bombers could not actually be stopped. Their only hope was to hit a plane or two and cause the formation to split open in order to avoid the careening aircraft, thereby reducing bombing efficiency.

Our instructions were very clear. Fly into and through the box of flak. No evasive action; just get in and get out. A straight line is the shortest distance . . .

This preview had me sweating, and we were only spectators so far! You had to see the spectacle to appreciate the enormity of Ploesti as a bombing target. The cloud cover below us only added to the drama. Some fifteen bomber formations were moving relentlessly toward their respective targets, and most of the bombardiers were having difficulty finding their targets through the clouds. They would only get one shot at their target in a situation like this.

The conspicuous groupings of black or white puffs at our altitude, in an

otherwise cloudless environment, were like giant neon signs pointing to the several oil refineries surrounding the city. I really did not know which cluster of flak clouds was signaling our target. Or had our hosts not yet begun their reception?

Fifteen miles northwest of the city was another sky sign, indicating the whereabouts of Steaua Romana, the second largest refinery in the area, and one of the most successfully hit targets in the low level mission a year earlier. I began to see why it took many hundreds of bombers to make a dent in this massive oil-producing arena, and why we would no doubt be back many times before it was completely subdued.

Twenty miles seems far enough away, but I could see the trip up to the bomb release point was going to be a busy one. The sought-for target checkpoints would not yet be seen, and the 5/10ths undercast didn't help in trying to orient ourselves. It's funny how your mind works in moments like this. I had a mental picture of people hiding in basements, and I said a little prayer for them. Actually they were fairly safe as we had no intention of hitting the city proper, and very few bombs were likely to land in residential areas unless they were located right next to the refinery. Of course, with this nearly solid cloud cover, things could be different. In the great land-air battle of 1 August, 1943, very few homes were hit by American bombs.

"Major James, get ready to make a turn to seventy-seven degree heading at 1416 hours," announced navigator Wood. At 1415 hours the lead plane dipped its wings and began the turn onto the bomb run. They had turned a minute earlier than Sherm had calculated. By then I had left the side window and leaned over the bombsight to locate the target through my own private front window, my oblique photo in hand. Glancing back and

forth between the photo and through some cloud holes to the target area, I finally saw what looked like oil tanks, and settled my eye into the eye-piece of the bombsight.

Up until now I had done nothing toward establishing range with my rate (of approach) knob. So before I got too serious about establishing my rate of approach, I tried to locate the actual aiming point. Instead of a two-abreast tank farm running generally east and west, the tank farm in my bombsight eye-piece was *square* shaped. I checked my target photo and had my worst fears confirmed.

"Sherm!" I hollered. "Did we turn early?"

"Yeah," he answered. "A minute early. Why?"

"This is the wrong target!"

"Right or wrong, this is the one we are going to bomb," interjected the pilot. He wasn't going to be a hero.

"Yes, sir!"

Not only was the tank farm the wrong shape, but there were a lot of strange-looking structures immediately to the right of the cluster of oil tanks. This certainly was not Xenia, because their tank farm was all by itself. However, we had a straight shot into some target, so I decided to make the best of it.

At least we had one thing going for us: the group that was assigned to this target had not yet shown up, so we did have first crack at it. I would not like to be racing someone for it. Also, being first in meant you would not have the target obscured by bomb bursts from a previous group. Usually it took awhile for the smoke to clear from a first attack, and if they hit some oil tanks the smoke would not clear at all. We would not be very popular with the group assigned to this target, but that was a small worry.

I went back to my sight and chose a new aiming point—the large tank at the center of the farm. A cloud umbrella was over the target and extended about five or six miles in front of the aiming point, which I could still see from my viewing angle. *I will not be able to see the aiming point for the final twenty or thirty seconds of my bomb run!*

This development would require a bombing technique known as offset bombing, in which a bombardier locates a check point at the extreme left (or right) on the lateral cross hair and another at the near end on the fore and aft cross hair. This of course after first locating the intersection of the cross hairs on the actual aiming point.

I was in luck as there were some good reference aiming points that could be seen through the space between the scattered clouds. *Ploesti I am going to lick you!*

But first a word from the defenders. They had other ideas. I had been hearing the muffled bursts right outside our plane, and had been seeing the flak in my bombsight telescope. Their accuracy was emphasized when a piece of flak came through our nose compartment side window and narrowly missed Sherm's head. I felt the plane rock from the nearby explosion. One of our planes received a flak hit, and an engine caught fire. I couldn't see it and I was just as glad to be spared the sight. Knowing it was there was bad enough. Some described a flak barrage as "standing out in an open field during a severe hailstorm." There was nothing you could do about it. No place to hide—just pray a lot.

During the next few seconds I made some minor knob corrections to keep the two cross hairs on their respective offset aiming points, and by that time the little warning flag had popped into view in my eye-piece. That told me there were about eight seconds until "bombs away".

Even though I could no longer see the aiming point, the center tank in the tank farm, my offset aiming points were holding up. Satisfied that my cross hairs, while centered on a cloud were actually on the aiming point, I came out of the bombsight, sat back on my haunches, armed the bombsight with a flick of my finger, and took one more peek at my masterpiece in the eyepiece as the reference aiming points disappeared under the clouds. I looked over to my buddy Sherm and gave him a cocky Ballantine's "OK" sign.

We both watched the external sighting angle index pointer closing in on the dropping angle index pointer. When the indices met I heard a click within the sight as the electrical contact was made, and simultaneously, the louder sound of the bomb release as the bomb shackles expelled the bombs from the bomb racks.

"Bombs away!" I reported, with a trace of pride in my voice. I tried to play it cool but I couldn't, as I knew I had done well. The eight amber lights on my control panel winked off one at a time, so fast that they all seemed to extinguish at once. It was final confirmation that the bomb run was over.

"Bomb bay doors closed," I added, this time more matter-of-factly, as I flipped the appropriate switch. Despite the minus sixty outside, and not much warmer inside, I was soaked from my waist up. Even my feet were warm, for a change. As I crawled over the bombsight to view my handiwork Sid told us, from his rear turret, "Beautiful release. Everyone behind us toggled on time. We have good

formation, so if the 'world's greatest bombardier' got a 'shack' we have a perfect mission."

Now I really began to sweat because soon everyone might know how I did. I could follow the group's bombs for about twenty of the thirty-seven seconds it took the bombs to reach the ground, and watched the pinpoints disappear into the clouds, hopefully headed for the cluster of oil tanks. As we banked away from the target, Major James came on the intercom with "We've been working for the government up to now, but from here on in we are in business for ourselves!" I don't believe it could have been stated better. *Our sole job now was to get home.*

The flak was the most that I had ever been exposed to and I really hadn't seen much of it, so the rube in me took over for a moment and I climbed up and looked out the side window. It was awesome. In between some old, soft black flak clouds a bright red flash would appear, to be immediately surrounded by a sharp, jagged black shroud which would soften into the familiar flak cloud. Then another, fifty yards away. And another. And another. This ubiquitous display of death's calling cards begged the question as to why none of it had hit me.

I was enthralled by it all, and innocently pushed my face up against the window like a kid in a candy store. Nothing but a thin section of Plexiglas and my flying goggles between the potentially hot steel and my face—a foolish move on my part.

We never did learn what refinery we sighted on. It may have been Columbia-Aquila or possibly the big prize Astra Romana. It certainly was not Xenia, although many returning crews thought it was.

Somebody hit Astra Romana, the largest refinery in Europe. We liked to think that was our target, as it was shut down for nearly a month and did not get back to any significant production level for another month. It never again achieved more than 39 percent of its previous peak performance in the fall of 1943. Phoenix-Orion, which was entirely surrounded by Astra Romana and was the fifth largest refinery at Ploesti, was destroyed—never to reopen. Xenia lucked out that day.

The trip home was uneventful.



Ploesti was blasted by a total of 25 bombing attacks before it was finally subdued. British bombers hit the refineries four times at night, dodging searchlights and flak. The Americans preferred daylight bombing on their turns at the beleaguered target.

In all, 6627 Allied bombers braved the flak-infested skies of Ploesti, destroying 84½ tons of oil production for each ton of bombs dropped.

The price for destroying Hitler's main source of oil was high—339 bombers were shot down at Ploesti.

The entrance to the beautiful Pra-hova Valley, known to its founders as the "white town of black gold" was known to Allied bomber crews as the *graveyard of bombers*.

LIBERATOR CLUB

The LIBERATOR CLUB was formed October 1968, sponsored by the San Diego Aero-Space Museum. It is an international organization for anyone who was associated with the Liberator airplane during WW II. Membership is also open to production personnel, historians, writers, modelers, WW II aviation enthusiasts and relatives of crewmen. Ground crews and support personnel of groups and squadrons are also welcomed. PURPOSE OF THE CLUB: to promote the significant role of the Liberator Airplane in WW II and to call attention to the outstanding achievements of the airplane and its crewmen, and to encourage the preservation of articles, photographs and documents connected with the history of this airplane. The LIBERATOR CLUB holds no reunions or regularly scheduled meetings. Membership dues support a newsletter, published twice a year, and the acquisition of photos, books and exhibit materials. Books, posters, photos, models and jewelry identified with the Liberator are available upon request.

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